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EXAMINER	
LEAVITT, MARIA GOMEZ	

ART UNIT	PAPER NUMBER
1633	

NOTIFICATION DATE	DELIVERY MODE
12/29/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/573,813	WADA ET AL.	
	Examiner	Art Unit	
	MARIA LEAVITT	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 September 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7,15,16,18,19 and 41-75* is/are pending in the application.

4a) Of the above claim(s) *46-75* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7,15,16,18,19 and 41-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAIL ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09-03-2010 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 7, 15, 16, 18, 19, 41-75 are currently pending; claims 7, 15, 18, 19 and 41 have been amended and claim 22 has been canceled by Applicants' amendment filed on 09-03-2010. Claims 46-75 were previously withdrawn from consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim by Applicant's amendment filed on 07-22-2010.

Therefore, claims 7, 15, 16, 18, 19 and 41-45 are currently under examination to which the following grounds of rejection are applicable.

Rejections maintained in response to Applicants' arguments or amendments

The instant claims are directed to a microorganism comprising a NADH-dependent D-lactate dehydrogenase (ldhA) gene from Escherichia coli (E. coli), wherein both the inherent activity of a FAD-dependent D-lactate dehydrogenase (pfl) and the inherent activity of a pyruvate formate-lyase are inactivated or decreased, wherein said microorganism's ldhA activity is enhanced.

Claim Rejections - 35 USC § 103

Claims 7, 15, 16, 18, 42 and 44 remain rejected under 35 USC 103 as being unpatentable over Zhou et al., (Jan. 2003, Applied and Environmental Microbiology, pp. 399-407, or record) in view of Yang et al., (1999, Metabolic Engineering, pp. 141-152 , of record), and further in view of Shaw et al., (1975, J. Bacteriology, pp. 1047-1975).

Zhou et al., discloses various mutant of E. coli (i.e., W3110) characterized in that they produce D-lactic acid. Specifically, Zhou teaches genetically engineers E. coli wherein the activity of pyruvate formate-lyase (pfl) inherent in E. coli is inactivated by mutation of the pftB gene (page 400, col. 2, paragraph 2), said mutation reducing the catabolism of pyruvate to formate (page, 401, Fig. 1). This single mutation also eliminates the production of formate, ethanol and acetate in tube cultures containing 1% glucose (p. 402, col. 2). W3110 SZ32 mutant strain having a deleted pfl (Δ pfl) exhibits increased production of D-lactic acid in relation to parental strain W3110, e.g. 49.23±1.26 vs. 30.69 ±2.49, respectively (page 402, Table 2). Additionally, Zhou et al., generates other W3110 mutants wherein competing pathways for the production of l-lactic acid were eliminated including mutations for genes encoding for alcohol /aldehyde dehydrogenase (adhE) which eliminates or reduces ethanol production and acetate kinase (ackA) which eliminates or reduces acetate production, e.g., SZ63 (pflB frd adlhE ackA) (p. 403, table 3; Abstract). Note that glycolysis terminates when pyruvate is reduced via NADH and H+ to lactate (e.g., in the presence of lactate dehydrogenase, e.g ldh), or in the presence of alcohol dehydrogenase to ethanol, or in the presence of pyruvate formate lyase (e.g., in the presence of pfl), to acetate, ethanol, and formate, or hydrogen plus carbon dioxide (page 401, col. 2, last paragraph; Fig. 1)(**Current claims 7, 16, 42, and 44 in part**).

Zhou et al., does not specifically teach a metabolic engineering E. Coli with reduced activity in a FAD-dependent D- lactate dehydrogenase (dld).

However, at the time the invention was made, Yang discloses that E. Coli expresses three types of lactate dehydrogenase: two are membrane bound NAD-independent LDHs which irreversibly convert D- and L-lactate to pyruvate, and the third which is a fermentative LDH encoded by the ldhA gene which is induced by anaerobiosis and acidity (p. 144; third full paragraph). Yang et al., illustrated the central anaerobic metabolic pathway of E. coli at page 142, Fig. 1. Further Yang studies perturbation of existing pathways on the redistribution of carbon fluxes in E. Coli mutants including overexpression of fermentative lactate dehydrogenase (LDH) which catalyzes the production of lactate by transforming E. coli with a plasmid overexpressing the NADH-dependent D-lactate dehydrogenase (ldhA) gene and generation of the double mutant E. Coli strain YBS132 (ackA-pta-ldhA-). Yang teaches that LDH activities of strains carrying plasmid pTY2 showed a higher LDH activity, e.g., 25.1, vs. control values of 0.63 (p. 143, col. 1, paragraph 1; table 3); however, the acetate level was higher than that for the control plasmid. The amount of lactate produced by E. Coli strain YBS132 (ackA-pta-ldhA-) plus the ldhA plasmid was 6.91 in relation to parental production of strain YBS132 (ackA-pta-ldhA-) (page 147, Table 5), clearly indicating that lactate productivity is improved by addition of the plasmid encoding the ldhA gene in an ackA-pta-ldhA- E. Coli strain mutant. (**Current claims 7, 15, 16 and 18, in part**).

Shaw et al., complements the combined disclosure of Zhou and Yang by teaching double mutants Escherichia coli strains JS150 and JS151 lacking membrane bound flavoproteins lactate dehydrogenases L- and D-lactate dehydrogenases. Shaw et al., discloses in Table 2, that

L- and D-lactate dehydrogenases are differentially expressed in E. coli strains. **(Current claims 7 and 16, in part)**.

Therefore, in view of the benefits of metabolic engineering an E. Coli for production of D-lactic acid based on the generation of a mutant E. Coli wherein the activity of pyruvate formate-lyase (pfl) inherent in the microorganism is inactivated as taught by Zhou, it would have been prima facie obvious to one of ordinary skill in the art with the aim of further enhancing production of D-lactic acid to activate or mutate other genes competing at the various pathways confluent at the pyruvate node responsible for metabolizing pyruvate into D-lactic acid including overexpressing NADH-dependent D-lactate dehydrogenase (ldhA) gene as taught by Yang in combination with a mutant pfl , particularly because Zhou et al., discloses that the distribution of carbon in the fermentation of glucose to produce organic acids, ethanol, CO_2 and H_2 is largely determined by the relative in vivo activities of D-lactate dehydrogenase (ldhA gene), pyruvate formatelyase (pfl gene), and phosphoenolpyruvate carboxylase (ppc gene)" (page 401, col. 2, last paragraph)" and a person with ordinary skill has good reason to pursue the known options within her or his grasp. Though metabolic engineering is a complex science, there are well-established protocols for genetic manipulation, and large physiological knowledge of fermentative pathways in E. coli for the production of D-lactate. Moreover, it would have been prima facie obvious in an attempt to provide enhanced production of D-lactic acid, to metabolically engineered E. coli to study how the flux from pyruvic acid to lactate is modified (e.g., enhanced or reduced) by each L- and D-lactate dehydrogenases membrane-bound flavoproteins as taught by Shaw et al., and the fermentative NADH-dependent D-lactate dehydrogenase disclosed by Yang, as the cumulative effect of multiple mutations of the three types of lactate dehydrogenase may be

negative, additive or synergistic in the flux of pyruvate to lactate. Additionally, a person with ordinary skills has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipate success, it is likely that product not of innovation but of ordinary skill and common sense."M.P.E.P. §2144.07 states "The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945)." "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.)." When substituting equivalents known in the prior art for the same purpose, an express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). M.P.E.P. §2144.06.

***Reply to applicants' arguments as they relate to rejection of claims* 7, 15, 16, 18, 42 and 44 under 35 USC § 103**

At page 14-17 of Applicants' response filed on 07-22-2010, Applicants essentially argue that : 1) though Zhou describes a W3110 SZ32 mutant having a deleted pfl which exhibits increased production of D-lactic acid in relation to parental strain W3110, there is not sufficient reason to combine the teachings of Zhou and Yang as a whole, 2) the Examiner without citation to evidence from one of ordinary skill in the art states: "by deleting pfl, thus reducing or eliminating the routes leading to formation of formate and acetate, the pool of pyruvate would be increased and the flux from pyruvate could be shifted from the production routes of formate and acetyl-CoA to the production route of D- lactate with a reasonable expectation of success", and

3) the pyruvate node is very complicated as evidenced by the disclosure of Yang which teaches LDH activities of strains carrying overexpressing LDH, showed a higher LDH activity, however, the acetate level was higher than that for the control plasmid. The above arguments have been fully considered but deemed unpersuasive.

Regarding 1) and 2) the examiner has previously cited at page 5 of the office action filed on 04-05-2010, the statement by Zhou, " The distribution of carbon among these products (e.g, organic acids, ethanol, CO_2 and H_2) is largely determined by the relative in vivo activities of D-lactate dehydrogenase (ldhA gene), pyruvate formatelyase (pfl gene), and phosphoenolpyruvate carboxylase (ppc gene)" (page 401, col. 2, last paragraph)". Further, insight into the metabolic relevance of the pyruvate node is provided by the disclosure of Yang for the central anaerobic metabolic pathway of E. coli, explicitly providing the metabolic routes through the central pathways, the carbon input and outputs to biosynthesis, CO_2 and excreted product that can be referenced to compute the throughput of each step employed and strategies to generate metabolically engineered E. coli with increased Lactate yield. Indeed, knowledge of the metabolic pathways of E. coli had been routinely used in the art for many years prior to the filing date of the instant application for accelerating the design of cells with improved or desired properties, including production of lactic acid.

Regarding 3) , the fact that overexpression of lactate dehydrogenase (ldhA) with an increase of 10 times more in the LDH activity fails to divert a large fraction of the carbon flux to lactate as disclosed by Yang is not dispute. However, Yang also discloses that:

> "Overexpression of LDH in the parent strain simultaneously increases the common flux as well as the flux through the acetyl-CoA branch. Subsequently, the flux amplification factors (or deviation indices which can be related to the flux control coefficients) are positive for all three fluxes occur- ring at the pyruvate node" (Abstract)

Note that the E. coli mutant over- expressing LDH do not have other genes mutated. Also note that both the E. coli mutant over- expressing LDH and E. coli mutant in ackA, pta, and ldhA of Yang represent mutations of genes affecting the pyruvate node represented by the branch point between lactate dehydrogenase (LDH), which catalyzes the formation of lactate, and pyruvate formate lyase (PFL), which leads to the formation of formate and acetyl-CoA, under anaerobic conditions (Yang et al., p. 142, col. 2; Fig. 1). In view of the disclosure of the metabolic relevance of the pyruvate node, those of skilled in the art could readily determine what genes affecting the pyruvate node could be metabolically engineered to disrupt, block or inactivate one or more metabolic pathways that draw carbon away from pyruvate. For example, formate can typically be synthesized directly from pyruvate, and by inactivating the enzyme involved in the synthesis of formate, i.e. pfl, lactate production can be expected to increase. The level of skill and knowledge in the art is such that one of ordinary skill in the art could design protocols for genetic manipulation in fermentative pathways in E. coli for the production of D-lactate. Indeed the specification as filed provides information regarding various functional and metabolically engineered E. coli mutants in their production of lactic acid. For example, FIG. 1 is a graph showing the time course of an amount of D-lactic acid accumulated in the culture solution by MG1655ΔpflΔdld/pGAPldhA strain and MG1655ΔpflΔdld/ GAPpldh genome-inserted strain as related to MG1655ΔpflΔdld strain wherein insertion of the GAPpldh genome appears to enhance production of D-lactic acid after 20 hr incubation as related to MG1655ΔpflΔdld/pGAPldhA strain and MG1655ΔpflΔdld strain (paragraph [0087] of the published application]. Thus decreased activity of an E. coli pfl, dld and enhanced activity of

dhA are limited known manipulations known to involve alternate pathways interfering with production of lactate from pyruvate, absent evidence of unexpected properties.

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Claims 41, 43 and 45 remain rejected under 35 USC 103 as being unpatentable over Zhou et al., (Jan. 2003, Applied and Environmental Microbiology, pp. 399-407, or record) in view of Yang et al., (1999, Metabolic Engineering, pp. 141-152 , of record) and Shaw et al., (1975, J. Bacteriology, pp. 1047-1975) as applied to claims 7, 15, 16, 18, 42 and 44 above, and further in view of Courtright et al., (J Bacteriol. 1970, pp. 722–728, of record)

The teachings of Zhou, Yang and Shaw are outlined in the paragraphs above.

The combined disclosure of Zhou, Yang and Shaw fails to teach a microorganism wherein at least one of the activity of malate dehydrogenase (mdh) inherent in the microorganism and activity of aspartate ammonia-lyase (aspA) inherent in the microorganism are inactivated or decreased.

However, at the time the invention was made, Courtright discloses Escherichia coli K-12 mutants devoid of malate dehydrogenase activity. Courtright discloses two pathways to produce succinic acid under anaerobic conditions, i.e., a pathway to lead to succinic acid via malic from oxalacetic acid, and a pathway to lead to succinic acid via aspartic acid from oxalacetic acid (page 727, Fig. 1, legend; p. 726, col. 1, paragraph 1). Moreover, Courtright teaches that malate dehydrogenase (mdh) mutants do not require succinate for anaerobic growth on glucose (e.g., there is not activity from oxalacetate to malic acid under anaerobic conditions) and that mutants

devoid of malate dehydrogenase activity activate the pathway leading to succinic acid via aspartic acid from oxalacetic acid.

Therefore, it would have been prima facie obvious to one of ordinary skill in the art in an attempt to provide enhanced production of D-lactic acid, to metabolically engineered E. coli generated y the combined teachings of Zhou, Yang and Shaw to further reduce malate dehydrogenase activity, particularly because Courtright discloses Escherichia coli K-12 mutants devoid of malate dehydrogenase activity (mdh) do not require succinate for anaerobic growth on glucose and pyruvate serves as a precursor of OAA and Lactate. Thus by inhibiting the pyruvate formate lyase, then pyruvate is redirected to lactate formation. The manipulation of previously identified and well-established protocols for generation of metabolically engineered E. Coli is within the ordinary level of skill in the art of biotechnological fermentation products. Thus, the skilled artisan would have a reasonable expectation of success in generating a metabolically transformed E. coli strain in which the activity of FAD-dependent D- dld inherent in the microorganism is decreased, activity of pfl inherent in the microorganism is decreased, activity of Escherichia coli-derived NADH-dependent D-ldhA in the microorganism is enhanced and activity of mdh is reduced resulting in improvement of D-lactic acid production.

Reply to applic*ants' arguments as they relate to rejection of claims* 41, 43 and 45 under 35 USC § 103

At page 19 of Applicants' response filed on 07-22-2010, Applicants essentially argue that Courtright et al., is silent about claims 41 and 43. Such is not persuasive.

Claim 41 is a product claim that further limits the microorganism of claim 7 comprising an E. coli-derived ldhA gene resulting in ldhA increased activity, and inherent activities of FAD-dependent dld and pfl inactivated or decreased, to an additional reduced inherent activity in the microorganism such as malate dehydrogenase (mdh). Courtright discloses Escherichia coli K-12 mutants devoid of malate dehydrogenase activity. As pyruvate serves as a precursor of OAA and Lactate, and malate is typically synthesized directly from OAA, by inhibiting mdh, then production of lactated should be reasonably expected to increase, absent evidence to the contrary.

*****

Claim 18 and 19 are rejected under 35 USC 103 as being unpatentable over Zhou et al., (Jan. 2003, Applied and Environmental Microbiology, pp. 399-407, or record) in view of Yang et al., (1999, Metabolic Engineering, pp. 141-152 , of record) and Shaw et al., (1975, J. Bacteriology, pp. 1047-1975) as applied to claims 7, 15, 16, 18, 42 and 44 above, and further in view of Maier et al (US Patent Application No. 10/620487, Date of filing July 16, 2003)

The teachings of Zhou, Yang and Shaw are outlined in the paragraphs above.

The combined disclosure fails to teach a glyceraldehyde-3-phosphate dehydrogenase promoter from E. coli .

However, at the time the invention was made, Maier et al., discloses genetically engineered microorganism including transformant Escherichia coli (page 2, paragraph [0026]) for producing amino acids and amino acid derivatives of the phosphoglycerate family. Moreover, amino acid-overproducing microorganisms include cloning of a yfiK gene into plasmid vectors

under the control of suitable promoters for overexpression of the yfiK-gene product (page 2, [0027][0028]) . Maier teaches suitable promoters including "the constitutive GAPDH promoter of the gapA gene or the inducible lac, tac, trc, lambda, ara or tet promoters in Escherichia coli are known to the skilled worker" (page 2 [0031],) [0035]). Furthermore, Maier successfully exemplifies expression of the yfiK gene product in transformant E. coli driven by the glyceraldehyde-3-phosphate dehydrogenase promoter from E. coli (page 3, paragraph [0065]).

The manipulation of previously identified DNA fragments and cell transformation systems is within the ordinary level of skill in the art of molecular biology. Therefore, it would have been prima facie obvious for one of ordinary skill in the art at the time the invention was made, on teachings provided by the combined cited references, to substitute any of the known promoters of E. coli as taught by Maier including a glyceraldehyde-3-phosphate dehydrogenase promoter in the recombinant plasmid pFB15 taught by Yang et al., for overexpression of a gene of interest with a reasonable expectation of success, particularly because Maier exemplifies successfully exemplifies expression of the yfiK gene product in transformant E. coli driven by the glyceraldehyde-3-phosphate dehydrogenase promoter from E. coli to enhance production of amino acid in a fermentation process.

Reply to applicants' arguments as they relate to rejection of claims **18 and 19 under 35 USC § 103**

At pages 19-20 of Applicants' response filed on 07-22-2010, Applicants essentially argue that at best Maier merely describes at paragraphs [0030]-[0031] a short list of promoters for increasing expression of a desired gene. Such is not persuasive.

Claim 19 is a product claim that further limits the E. coli of f claim 18 comprising inherent activities of FAD-dependent dld and pfl inactivated or decreased, said E. coli comprising a ldhA gene from E. coli under the control of any promoter from E. coli, to a glyderaldehyde-3-phosphate dehydrogenase promoter. Accordingly, it would have been prima facie obvious for one of ordinary skill in the art at the time the invention was made, on teachings provided by the combined cited references, to substitute any of the known promoters of E. coli as taught by Maier including a glyceraldehyde-3-phosphate dehydrogenase promoter in the recombinant plasmid pFB15 taught by Yang et al., for expression/overexpression of a gene of interest with a reasonable expectation of success as Maier et al., successfully teaches expression of a gene of interest in transformant E. coli under the control of a glycolitic promoter, i.e glyceraldehyde-3-phosphate dehydrogenase.

New grounds of objection/rejection

Claim Objections

Claims 7 and 15 are objected to because of the following informalities. Claims 7 and 15 have been amended to recite "an NADH-dependent D –lactate dehydrogenase". The use of the indefinite article "an" in this context is grammatically incorrect, i.e. the indefinite article --a-- should be used in this context. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. § 101 reads as follows:

> "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".

Claims 7, 15, 16, 18, 19 and 41-45 are rejected under 35 U.S.C. § 101 because the claimed invention is drawn to non-statutory subject matter.

The preamble of the claim 7 recites "A microorganism comprising an Escherichia coli-derived ….". Natural microorganisms that are not isolated or purified, and corresponding inherent FAD-dependent D-lactate dehydrogenase (did) and pyruvate formate-lyase (pfl) inactivated or decreased activities, wherein activity of a NADH-dependent D-lactate dehydrogenase (IdhA) is enhanced are products of nature that are not statutory subject matter because they fail to show the "hand of man" in their construction and because they read on non-isolated microorganisms. Amending the claim 7 to recite "An isolated microorganism..." would be remedial.

Claim Rejections - 35 USC § 112- Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7, 15, 16, 18, 19 and 41-45 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 has been amended to recite "a microorganism comprising an E. coli-derived ldhA gene".

The metes and bounds of this term are indefinite because "derived" can encompass multiple meanings from the origin of something to deducing something. Therefore, the intended mean of the term, "derived" is vague and indefinite. Recitation of term "obtained or isolated from.." in place of derived would obviate the basis of this rejection.

Claims 15, 16, 18, 19 and 41-45 are indefinite insofar as they depend from claim 7.

Conclusion

Claims 7, 15, 16, 18, 19 and 41-45 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Leavitt whose telephone number is 571-272-1085. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach, Ph.D can be reached on (571) 272-0739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1633; Central Fax No. (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Maria Leavitt/

Maria Leavitt
Primary Examiner, Art Unit 1633